

What is claimed is:

1           1. A multifunctional rotary tool bit for a drilling and  
2 cutting system adapted for preparing an osteotomy in a bone,  
3 comprising:

4           a) a longitudinal, rotatable shaft having a proximal  
5 end and a distal end;

6           b) a mounting shank disposed at said proximal end of  
7 said longitudinal, rotatable shaft for interfacing with a  
8 handpiece of an osteotomy cutting and drilling system;

9           c) a cutting and drilling blade having a proximal  
10 end and distal end, disposed at said distal end of said  
11 longitudinal rotatable shaft, said cutting and drilling  
12 blade including a plurality of cutting edges and surfaces  
13 for cutting and drilling bone and tissue material; and

14           d) an osteotomy locator tip having dual lobes  
15 disposed in a common plane, formed at said distal end of  
16 said cutting and drilling blade, to locate an osseous  
17 implant site and prevent wandering and slipping of said  
18 tip.

1           2. The tool bit in accordance with claim 1, wherein the  
2 first portion of said distal end of said cutting and drilling  
3 blade immediately after said osteotomy locator tip comprises a  
4 redirectable tip permitting the avoidance of vital features in  
5 the jawbone by the lateral movement of said redirectable tip.

1           3. The tool bit in accordance with claim 2, wherein said  
2 redirectable tip is approximately 2.0 mm in length.

1           4. The tool bit in accordance with claim 2, wherein said  
2 cutting and drilling blade has multifaceted cutting edges for  
3 creating a crestal bone height reducer.

1           5. The tool bit in accordance with claim 4, wherein said  
2 proximal end of said cutting and drilling blade comprises a  
3 tapered countersink.

1           6. The tool bit in accordance with claim 5, wherein the  
2 last portion of said proximal end of said cutting and drilling  
3 blade immediately after said tapered countersink further  
4 comprises a gross osseous crestal bone height reducer.

1           7. The tool bit in accordance with claim 6, further  
2 comprising an osteocompressor operatively connected to said  
3 gross osseous crestal bone height reducer.

1           8. The tool bit in accordance with claim 7, wherein said  
2 cutting and drilling blade is coated with material to reduce  
3 the coefficient of friction, improve drilling and cutting  
4 performance, improve wear and corrosion resistance, and  
5 increase the thermal conductivity of said cutting and drilling  
6 blade.

1           9. The tool bit in accordance with claim 8, wherein said  
2 cutting and drilling blade coating material is selected from a  
3 group consisting of: a diamond-like carbon coating, a ceramic  
4 coating, a tungsten carbide coating, a titanium nitride  
5 coating, an aluminum titanium nitride coating, a tungsten  
6 disulfide coating, a diamond dust particulate coating, and a  
7 combination of said enumerated materials.

1           10. The tool bit in accordance with claim 7, further  
2 comprising a linking member operatively connecting said gross  
3 crestal bone height reducer and said mounting shank.

1           11. The tool bit in accordance with claim 10, wherein  
2 said linking member is coated with a material to reduce the  
3 coefficient of friction, and improve wear and corrosion  
4 resistance of said linking member.

1           12. The tool bit in accordance with claim 11, wherein  
2       said linking member coating material is selected from a group  
3       consisting of: a diamond-like carbon coating, a ceramic  
4       coating, a tungsten carbide coating, a titanium nitride  
5       coating, an aluminum titanium nitride coating, a tungsten  
6       disulfide coating, a diamond dust particulate coating, and a  
7       combination of said enumerated materials.

1           13. The tool bit in accordance with claim 10, wherein  
2       said mounting shank includes a chuck comprising a generally I-  
3       shaped flat side and a generally semicircular disk above and  
4       adjacent to a generally semicircular groove.

1           14. The tool bit in accordance with claim 13, in  
2       combination with a rotation providing handpiece to form a  
3       dental drilling and cutting system.

1           15. A multifunctional rotary tool bit for a dental  
2 drilling and cutting system adapted for preparing an osteotomy  
3 in jawbone, comprising:

4           a) a longitudinal, rotatable shaft having a proximal  
5 end and a distal end;

6           b) a mounting shank disposed at said proximal end of  
7 said longitudinal, rotatable shaft for interfacing with a  
8 handpiece of an osteotomy cutting and drilling system;

9           c) a cutting and drilling blade having a proximal  
10 end and distal end, disposed at said distal end of said  
11 longitudinal rotatable shaft, said cutting and drilling  
12 blade including a plurality of cutting edges and surfaces  
13 for cutting and drilling bone and tissue material; and

14           d) an osteotomy locator tip having dual lobes  
15 disposed in a common plane, formed at said distal end of  
16 said cutting and drilling blade, to locate an osseous  
17 implant site and prevent wandering and slipping of said  
18 tip.

1           16. The tool bit in accordance with claim 15, wherein  
2 the first portion of said distal end of said cutting and  
3 drilling blade immediately after said osteotomy locator tip  
4 comprises a redirectable tip permitting the avoidance of vital  
5 features in the jawbone by the lateral movement of said  
6 redirectable tip.

1           17. The tool bit in accordance with claim 16, wherein  
2 said redirectable tip is approximately 2.0 mm in length.

1           18. The tool bit in accordance with claim 17, wherein  
2 said cutting and drilling blade has multifaceted cutting edges  
3 for creating a crestal bone height reducer.

1           19. The tool bit in accordance with claim 18, wherein  
2 said proximal end of said cutting and drilling blade comprises  
3 a tapered countersink.

1           20. The tool bit in accordance with claim 19, wherein  
2 the last portion of said proximal end of said cutting and  
3 drilling blade immediately after said tapered countersink  
4 further comprises a gross osseous crestal bone height reducer.

1           21. The tool bit in accordance with claim 20, further  
2 comprising an osteocompressor osteotome operatively connected  
3 to said gross crestal bone height reducer.

1           22. The tool bit in accordance with claim 21, wherein  
2           said cutting and drilling blade is coated with material to  
3           reduce the coefficient of friction, improve drilling and  
4           cutting performance, improve wear and corrosion resistance,  
5           and increase the thermal conductivity of said cutting and  
6           drilling blade.

1           23. The tool bit in accordance with claim 22, wherein  
2           said cutting and drilling blade coating material is selected  
3           from a group consisting of: a diamond-like carbon coating, a  
4           ceramic coating, a tungsten carbide coating, a titanium  
5           nitride coating, an aluminum titanium nitride coating, a  
6           tungsten disulfide coating, a diamond dust particulate  
7           coating, and a combination of said enumerated materials.

1           24. The tool bit in accordance with claim 20, further  
2           comprising a linking member operatively connecting said gross  
3           crestal bone height reducer and said mounting shank.

1           25. The tool bit in accordance with claim 24, wherein  
2           said linking member is coated with a material to reduce the  
3           coefficient of friction, and improve wear and corrosion  
4           resistance of said linking member.

1           26. The tool bit in accordance with claim 25, wherein  
2 said linking member coating material is selected from a group  
3 consisting of a diamond-like carbon coating, a ceramic  
4 coating, a tungsten carbide coating, a titanium nitride  
5 coating, an aluminum titanium nitride coating, a tungsten  
6 disulfide coating, a diamond dust particulate coating, and a  
7 combination of these enumerated materials.

1           27. The tool bit in accordance with claim 24, wherein  
2 said mounting shank includes a chuck comprising a generally I-  
3 shaped flat side and a generally semicircular disk above and  
4 adjacent to a generally semicircular groove.

1           28. The tool bit in accordance with claim 27, in  
2 combination with a rotation providing handpiece to form a  
3 dental drilling and cutting system.

1           29. A method for drilling and cutting to prepare an  
2 osteotomy in a jawbone, comprising the steps of:

3           a) using a cutting and drilling blade with a  
4 osteotomy locator tip of a multifunctional dental  
5 surgical tool to precisely locate an osseous implant site  
6 and prevent wandering and slipping of said tip to perform  
7 crestal bone marking;



8           b) using a redirectable tip of said cutting and  
9           drilling blade to avoid bone and tissue anatomical vital  
10          sites in a patient's jawbone;

11           c) using a crestal bone height reducer operatively  
12          formed from said cutting and drilling blade, to create a  
13          leveled implant osseous platform by moving said cutting  
14          and drilling blade in a buccal-lingual, nonlinear motion;

15           d) using said crestal bone height reducer to harvest  
16          bony particulate material;

17           e) using a tapered countersink of said  
18          multifunctional dental surgical tool to create a  
19          counterbore in cortical bone of said jawbone;

20           f) using a gross osseous crestal bone height reducer  
21          of said multifunctional dental surgical tool to harvest  
22          bony particulate materials;

23           g) using an osteocompressor operatively connected to  
24          said gross osseous crestal bone height reducer to  
25          compress the osseous site, completing the preparation of  
26          said osteotomy in said jawbone; and

27           h) using a synthetic bone graft material mixed with  
28       said bony particulate material to reconstruct bone  
29       structures.